How prepared is Croatia for a knowledge-based society?

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Chapter 5

HOW PREPARED IS CROATIA FOR A KNOWLEDGE-BASED SOCIETY?

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Oh, yes, you have learned men. Who collect more facts than do the learned men of England. They collect facts, and facts, and empires of facts. But which of them will rekindle the light within?

E. M. Forster: Howards End

ABSTRACT

Knowledge has become the key to economic competitiveness and success. An important part of an economy's overall competitiveness – the ability to achieve success on markets – is labour-force competitiveness. One of the main determinants of the competitiveness of human resources is a country's education system. The paper discusses EU activities related to achieving a move to a knowledge-based society and labour force competitiveness. After the introduction, a short theoretical framework is provided. The third part of the paper analyzes the situation in newly accepted EU members, in future members and in Croatia. After the assessment of some problems in Croatia, some proposals for improvements of the educational system are given.

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Key words:
knowledge-based economy, education, labour force, European Union, Croatia

INTRODUCTION

Recent rapid advances in science and technology as well as globalisation pressures mean that modern economies are increasingly based on knowledge. The ability to create, distribute and exploit knowledge and information seems ever more important and is often regarded as the single most important factor underlying economic growth and improvements in the quality of life. Economic competitiveness depends crucially on how well countries and firms make use of their own intangible assets, such as employee knowledge, skills and creativity, know-how, and processes, as well as their ability continuously to improve those processes. The most important factors in labour-force[i] competitiveness are the educational structure, and the compatibility of the demand and supply sides of labour in areas such as knowledge, expertise, ability and labour costs.

In the paper, the focus is put on EU activities related to the achievement of a knowledge-based society and labour-force competitiveness. After an introduction, we provide a short theoretical framework. The third part will give some international comparisons and analyze the situation in Croatia. The paper will also give some proposals for improvements of the educational system in Croatia.

THEORETICAL FRAMEWORK AND EMPIRICAL EVIDENCE

Wide-ranging knowledge and the education system are increasingly important under the current conditions of the global economy and a knowledge-based world. Education helps a country move up the ladder of development and prompts its transition from the production of simpler products to more complex items. A more educated labour force finds it easier to adopt foreign technology and to develop its own more rapidly.

A knowledge-based economy is one in which the generation and exploitation of knowledge play the predominant part in the creation of wealth. A knowledge economy is not an economy of scarcity, but rather of abundance because information and knowledge can be shared, and actually grow through application. A key component in a knowledge-based economy is human capital, or, more accurately, its competencies. In traditional industries most jobs require employees to learn how to perform routine functions, which, for the most part, remain constant over time. In the knowledge-based economy, rapid changes force workers constantly to acquire new skills and to update their skills throughout their lifetimes.

Barro and Sala-i-Martín (1995) have shown that the level of education (measured by years of schooling), as well as public sector allocations for education, exhibit a high correlation to growth in real per capita income. Highly competitive human resources result from a quality education that is available to a large percentage of the population. Bassani and Scarpetta (2001) found a significant correlation between an increased level of education in a country and the country's economic growth. According to their findings, an additional year of education for a country's population is associated with an average increase in output per capita by four to seven percent.

The value of formal education in and of itself should not be uncritically overestimated. Most researchers agree that human capital is an essential component of competitiveness and economic development (return on investment in education is greater than that of any other investment), but there is no a *guarantee* that the formal education structure accurately reflects real abilities and skills. The reasons for this are manifold. In general, the existence of a lot of people with (mostly obsolete) academic qualifications is not a true indicator of workforce competitiveness. The labour force can easily be insufficiently or inappropriately educated, i.e. the (formally educated) employed do not have the know-how necessary for successful market competition[ii]. Under conditions of rapid technological development and commerce based increasingly more on conceptual rather than on material production, academic diplomas and degrees are no longer a guarantee of economic success either to individuals or to society as a whole. Thus, firms can no longer rely solely on new graduates or new labour market entrants as the primary source of new skills and knowledge. Consequently, it is important to develop life-long learning and adult education programmes and ensure participation of the whole population.

In many developing and transitional countries the existing educational systems – with respect to the results – are expensive and ineffective, but there are no simple formulas to improve them. Here expertise is not sufficient: employees today have to be capable of creating, analyzing and transforming information, communicating effectively, and organizing and coordinating business activities. Developed communication skills, computer knowledge, and the ability and willingness to engage in further education and training are all sought-after qualities.

The biggest challenge for these countries is not just to get the hardware, but to have the skills required to use the technology. Educational systems can no longer emphasize task-specific skills but must focus instead on developing learners' decision-making and problem-solving skills and teaching them how to learn on their own and with others. The importance of tertiary education is especially great, as it directly influences the productivity and competitiveness of a national economy and the improvement of general living standards (World Bank, 2002). In short, the educational structure of a population and employees in line with economic needs constitute an essential component of competitiveness and economic development.

THE SITUATION IN THE EUROPEAN UNION

The World Bank (2002) provided the following framework to help countries articulate strategies for their transition to a knowledge-based economy and society:

- an economic and institutional regime to provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship;
- an educated and skilled population to create, share, and use knowledge well;
- a dynamic information infrastructure to facilitate the effective communication, dissemination, and processing of information;
- an efficient innovation system involving firms, research centres, universities, consultants, and other organizations, to tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology.

We will dedicate more attention to the second item – an educated and skilled population to create, share, and use knowledge well –

keeping in mind the importance of the other three. Thus, we will analyse the activities in the EU (and new and future members of the EU) related to the education and improvement of the knowledge of the population and the labour force. We will point out the most important documents, strategies and bodies charged with the accomplishment of the goals set out above.

European Union activities and documents

The Lisbon Strategy, commenced in March 2000 at the Lisbon Summit, set a goal for the next decade for the EU to become the most competitive and dynamic knowledge-based economy in the world, capable of sustained economic growth with more and better jobs and greater social cohesion.

The strategy focuses on EU competitiveness and cohesion in an increasingly innovative EU economy, creating more and better jobs. A new, open *method of coordination*, according to which member states define common objectives for delivery in the manner deemed most appropriate at national level, has been adopted for the implementation of the strategy. It was agreed that the European Council would meet regularly to review and push the process forward. The process of economic growth and EU cohesion were reviewed at the Economic Council in Stockholm 2001, Barcelona 2002, and most recently Brussels 2003 (European Council, 2004).

EU members are obliged to produce different implementation documents, like Operational Programme for the Information Society (OPIS), which is the main tool for creating and putting into effect an information society. Programmes usually include measures for the diffusion and better use of information and communication technology (ICT); these tend to consist of educational and research systems adapted to the digital age, increases in the quantity and quality of electronically provided government services for citizens and the business community, an increase in the productivity of the public administration, upgrading skills and the creation of new jobs, and the development of high quality and affordable broadband infrastructure and services. Direct activities cover a broad scope of measures from training teachers in primary and secondary education to use ICT, eBusiness adoption for small and medium enterprises (SMEs), and incentives for motivating and helping the employment of ICT in companies, especially in SMEs.

At the EU level, the results are positive, but there are huge differences between leaders in technology and competition (Finland and Sweden) on the one hand, and countries (or regions) that lag behind (like Greece or Southern Italy) and are trying to catch up with advanced societies on the other. Latter societies have so far shown ease in adapting to major technical and technological changes, but have difficulties in consolidating and disseminating them throughout the whole of society.

In 2002, in order to enhance education and labour force competitiveness, the Education Council adopted the *Work Programme*. The Programme includes three main objectives: improving the quality and effectiveness of education and training systems in the EU, facilitating the access of all to education and training systems, and opening up education and training systems to the wider world. Various measures are proposed for the realisation of particular objectives such as developing skills for the knowledge society, ensuring access to ICT for everyone, increasing recruitment to scientific and technical studies and strengthening European co-operation.

For all the mentioned objectives, the key is to keep labour market needs in perspective and to develop competencies for the knowledge economy. Countries that adequately prepare their human resources for active participation in the global knowledge and information economy will acquire a considerable advantage and stand most to gain. They will be pioneers in defining and determining the priorities for the future. Thus, the goal – to produce agile, risk-taking, independent thinkers with the skills to process information, solve problems and work independently and as a part of teams – is clear and indisputable. The way to get there is less clear. Also, there is no single blueprint suitable for all.

International comparisons

Due to many differences in educational systems (like the mandatory duration of schooling, number of hours taught, the proportion of students in the total population, institutional frameworks or societal development), it is very hard – almost impossible – to compare the current situation in different EU members regarding the achievement of labour force competitiveness and educational results. Some conclusions could be obtained from the educational structure of labour forces in different countries. Regardless of its inconsistencies for comparative pur-

poses, information on the level of the highest educational attainment is currently the best available indicator of labour force skills. Table 1 shows the education attainment of the labour force aged 15 and over according to the latest sources for a selected group of countries. We selected some smaller EU members, some new members and some other South and East European (SEE) countries. Only three customary levels of education attainment are cited: primary, secondary and tertiary.[iii]

Table 1 Share of labour force aged 15 and over (1999, in %)

Country	Level of education attainment			Per capita GDP, based on PPS in 1999 (in USD)
	Primary	Secondary	Tertiary	
EU old members				
Austria	21.9	68.9	9.2	25,503
Belgium	33.6	35.7	30.6	24,485
Denmark	22.8	52.2	24.7	27,818
Finland (1998)	28.0	50.4	21.5	23,236
Greece (1997)	47.2	28.7	22.9	15,689
Ireland	34.7	27.7	33.8	25,680
Netherlands (1998)	31.7	42.8	22.5	26,289
Portugal	79.5	11.5	8.9	16,935
Sweden	21.3	49.4	28.5	23,300
EU new members				
Czech R.	9.8	79.0	11.3	13,450
Estonia (1995)	15.7	66.9	17.4	8,455
Hungary	19.7	64.8	15.6	11,417
Latvia (1997)	16.2	67.3	16.4	6,574
Lithuania (1996)	20.2	39.3	40.5	7,538
Slovakia (1996)	12.7	75.6	11.9	11,136
Slovenia	21.6	62.7	15.7	15,694
other SEE countries				
Bulgaria (1997)	27.3	53.4	19.3	6,216
Croatia (1998)	24.7	58.3	17.0	8,267
Romania	35.3	52.2	12.5	8,939

Source: ILO (2002, Table 14a)
For GDP: OECD (2002).

Although there are obviously differing classifications and interpretations for education attainment in these countries, the data are nonetheless surprising. Among selected old EU members, Ireland has

the highest share of tertiary degrees, while the lowest is in Portugal. Austria is just little bit better off, but this is mostly due to the classification of apprenticeship (widespread in Austria) into the *secondary* level – despite the fact that this will mean one or more years of study or training beyond the conventional length of secondary schooling in other countries. Secondary qualification attainment ranges from 12% in Portugal to almost 70% in Austria. Portugal has the highest share of primary qualification attainment, followed by Greece. Countries often mentioned as examples of very competitive labour forces, such as Ireland and Finland, have a relatively high share of primary qualification attainment, while Sweden and Denmark have the lowest share of primary qualification attainment.

If one neglects the unrealistically high share of tertiary qualifications and the related low share of secondary qualifications in Lithuania, the differences in educational attainment are less pronounced among the new members. In them, around 15% of the labour force has a tertiary qualification. Among the countries listed, the Czech Republic has the lowest share of primary and tertiary qualifications and the highest level of secondary qualification attainment. Slovenia has the highest level of primary qualification attainment, while in other countries it varies between 10% and 20%. Secondary qualification attainment in new members encompasses between two thirds and three fourths of the labour force.

Among the other SEE countries, Bulgaria has the highest and Romania the lowest share of tertiary qualification attainment, with Croatia in the middle. Croatia has the lowest share of primary and the highest share of secondary qualification attainment, while the situation is opposite with Romania. Among the other SEE countries, Bulgaria has the highest proportion of tertiary qualifications, and Romania the lowest, while Croatia is between them. Croatia has the lowest proportion of primary and the highest proportion of secondary qualifications, while the opposite is true of Romania.

Without underestimating or overestimating the importance of certain educational attainments in securing economic development and competitiveness, it is obvious that a better education structure is closely linked with a higher level of economic and social development, like per capita GDP and similar indices. Of course, the proposition that perhaps it was general economic development that enabled the enhancement of labour force educational attainments, not *vice versa* should not be neglected. Indicators only give a partial view of the reality. By their very nature, they only measure what can be quantified and things for

which there are data. It should not be forgotten that educational qualifications may be relatively easy to measure, but offer only a poor proxy for human capital. What one really wants is a direct measure of economically relevant skills, but unfortunately there is no possible candidate for this direct measure. As we only have data about *formally* acquired educational qualifications – the actual quality of individual educational programs and study courses is not being considered here – the share of the employed educational attainments can lead very easily to erroneous conclusions. Thus, tertiary qualifications are distributed fairly equally (approximately one fifth of the total labour force) in the technologically and institutionally very developed Netherlands on the one hand, and in Bulgaria and Croatia on another. Portugal has made great economic and technological progress in recent years, but it still has a relatively small share of secondary and tertiary qualifications.

Another possibility for assessing labour force competitiveness and educational results is the illiteracy rate of persons aged 15 years and over (Table 2). According to the UN, illiteracy is defined as the inability to read and write simple sentences about everyday life; hence, the semi-literate – those who can read but not write are sometimes included in the percentage as well. As illiteracy of adult persons is very low in industrialised countries, we provide information only for a few developed EU and transitional countries.

Table 2 Illiteracy rate of persons aged 15 years and over (2001, in %)

Country	Adult illiteracy rate
EU old members	
Greece	2.6
Portugal	7.3
Spain	2.2
EU new members	
Hungary	0.7
Latvia	0.2
Lithuania	0.4
Malta	7.6
Slovenia	0.4
SEE countries	
Bulgaria	1.5
Croatia	1.6
Romania	1.8

Source: ILO (2002. Table 14e)

Using the UN definition of illiteracy, developed countries usually have an overall illiteracy rate of about 1%. The Croatian illiteracy rate is reasonable and a little higher than this percentage, but lower than the rates in Greece, Spain and Portugal. Therefore, the situation can be considered acceptable. Although there are no precise statistics on the true scale of the problem, it might well be estimated that functional illiteracy – defined as an insufficient mastery of a set of sophisticated skills – is a serious problem in Croatia, as it is in even the most developed countries, where it usually encompasses above 5% of the total population[iv] (OECD, 1997).

Table 3 Labour force and population aged 25 to 29 with completed tertiary education: latest available data (in %)

Country	Percentage of labour force* aged 25-29 with tertiary education (year used as a source)	Percentage of population aged 25-29 with tertiary education (year used as a source)	Note for population[v]
EU old members			
Austria	9.0 (1999)	8.6 (1991)	1
Denmark	26.1 (1998)	18.5 (1995)	2
Finland	21.6 (1998)	18.0 (1992)	2
Greece	34.0 (1998)	14.9 (1991)	2
Ireland	47.0 (1999)	19.8 (1991)	2
Netherlands	30.6 (1998)	–	
Portugal	14.0 (1999)	12.6 (1991)	3
Sweden	31.9 (1999)	26.8 (1995)	3
EU new members			
Czech R.	10.2 (1999)	12.6 (1991)	3
Cyprus	34.1 (1999)	28.0 (1992)	3
Estonia	37.8 (1999)	–	
Hungary	13.3 (1990)	13.3 (1990)	5
Latvia	–	26.8 (1995)	3
Lithuania	40.8 (1999)	26.8 (1995)	3
Slovakia	45.8 (1999)	13.0 (1991)	3
Slovenia	19.7 (1999)	14.1 (1991)	3
other SEE countries			
Bulgaria	18.7 (1992)	19.7 (1992)	3
Croatia	14.5 (1991)	8.9 (1991)	4
Romania	14.3 (1999)	9.1 (1992)	3

**The total labour force, or currently active population, comprises all persons who fulfil the requirements for inclusion among the employed or the unemployed.*
Source: ILO (2002. Table 14c and 14d)

The third option for evaluating labour force competitiveness and educational results – though equally burdened with methodological difficulties – is the percentage of the of labour force and population aged 25 to 29 with completed tertiary or degree-level education (this should not be confused with the previously presented tertiary level of education attainment). Table 3 provides the data for some selected countries.

Although, due to many data problems, it is not possible to make straightforward and fully reliable assumptions, some conclusions about the current situation can be drawn. Regarding the share of labour force and the population aged 25-29 with degree-level education, Croatia is obviously lagging behind the majority of the old and new EU member states. The proportion of the labour force aged 25-29 with degrees or equivalent in Croatia is only one third of the proportions in Ireland or in the Slovakia. The differences are not as huge when one compares the whole population of the young in various countries, but still the proportion of people aged 25-29 with degrees in Sweden, Lithuania and Latvia is threefold bigger than in Croatia. The OECD average for the 25-64 year old graduate population (not only the young population) was 22% (in 1999), while for Croatia it was 11% (in 2001). Thus Croatia has only half the OECD share of tertiary completers because of the relatively low enrolment rate and low percentage of students that actually acquire degrees.

THE SITUATION IN CROATIA

It is difficult to make an unequivocal assessment of the Croatian educational system because Croatia has not participated in international assessments of education and literacy. Even so, according to the OECD (2003) the considerable problems faced by the educational system can be cited with relative certainty: lack of emphasis on developing analytical and problem-solving abilities, very weak links between education and the professional world, and the non-development of lifelong learning. Although numerous education strategies have been proposed, they have neither been put into operation nor fully implemented, nor were any major reforms implemented at any level.

In Croatia, the current organization of the curriculum around subjects and teacher-dominated learning methods, with the focus on factual knowledge and passive learning, is not conducive to the development of the high-level technical, technological, and social competencies needed

in a competitive economy. There are too many compulsory subjects and not enough optional subjects. There is a serious lack of flexibility and a low level of local capability for curriculum development.

A serious problem of elementary and secondary education is *insufficient differentiation*. The curricula for higher elementary grades are designed to continue on into secondary school (gymnasium), and not for continuation of schooling in vocational or trade schools (even though only one fourth of all elementary school pupils go on to study in the gymnasiums). Consequently, a great many primary school pupils suddenly find the primary school programme for the 7th and 8th grades too difficult, and the existing opportunities for internal differentiation are not sufficient. Accordingly, students who are very capable and motivated find subject teaching too easy, while those who are less competent and less motivated find it too difficult.

Vocational education forces subject-specific specialization too early, while the curriculum is too narrowly focused on subject-specific skills, competencies, and attitudes. Further, links with the economic and social environment are generally very weak. Due to technological developments and structural changes in the Croatian economy there is no longer a need for most of the existing specializations (OECD, 2003).

A considerable number of youths in Croatia *drop out* of secondary and higher educational institutions. According to a rough estimate, approximately 1.5% of enrolled students do not complete secondary school (this percentage is considerably lower for the gymnasiums, and palpably higher in the three-year trade schools)[vi]. This is, among other reasons, caused by a serious lack of a network of "second chance" schools, aimed towards young people who have either been excluded from education or are on the verge of exclusion. High drop-out rates drive up the costs per graduate.

Croatia's tertiary system is so rigidly structured that institutions, faculties and students are unable to seize opportunities or adapt to change. One can say with relative assurance that the highly educated in Croatia have largely completed studies at university departments and academies that do not directly cater for the needs of a modern economy, and they often do not possess the vital and required knowledge and skill-sets for sought-after occupations.

The number of those enrolled in tertiary education is relatively low. It increased from 18% of the relevant age-cohort in 1985 to 31% in 1998, which is still considerably lower than in old EU member states (averaging around 50%) and individual Central and East European (CEE)

countries (averaging around 40%), although higher than in the most of the new EU members (averaging around 25%) (World Bank, 2002).

The average duration of college/university study is very long. The number of students who go on to earn degrees in relation to the number of students enrolled in the first year is less than 40%, while a large number of students discontinue their studies.

The number of persons who graduated over the last decade increased from 8,000 in 1993 to almost 15,000 in 2002 (and the total number of students also grew considerably – from 69,000 to 116,000). The highest growth in graduates was recorded in the social sciences and liberal arts; such graduates accounted for almost 57% of the total number of graduates. The proportion of graduates in the natural sciences also grew, but is still at the very low level of under 3% of the total number of graduates. The greatest decline was in the share of graduates in biotechnology, followed, to a somewhat lesser degree, by the medical and technical sciences, the percentage of which in the total number of graduates fell below 30.

There is a relatively low proportion of students majoring in the natural and technical sciences. The total number of students is 30%, which is significantly worse than Germany (47%), Turkey (45%), Slovakia (40%) and Slovenia (38%), and only a little better than the Czech Republic (28%), Bulgaria (26%) and Romania (21%) (World Bank, 2002).

There are serious problems with the knowledge and skills of graduates in social sciences. There is a serious shortage of macroeconomists, financial analysts, organizers and commodities- and securities-exchange operators, educated managers and entrepreneurs, international commodity and financial market experts, public administration experts, and lawyers specializing in labour and welfare law, the tax system, international law, etc[vii]. The reasons for these problems probably are caused by insufficient (or weak) links between the demand on the labour market and educational output.

The most dynamic sector of education systems in the world, *adult and life-long education, is almost completely neglected in Croatia.* It is underdeveloped, as far as the coverage of attendees, the number of specialized institutions, and specialized staff are concerned, and it is insufficiently regulated by law. In Croatia only 0.2 % of persons over 35 years old participate in one of the adult learning programs, while the EU average for the same age group is 7% (ILO, 2002). No (serious) campaign has been launched yet to motivate and explain the

concept and the need for life-long learning among the population due to relatively weak information and developmental infrastructure. The required infrastructure is undersized and some elements of the infrastructure simply do not exist, are yet to be built.

Croatia's education system, is slowly making the transition from a system that favoured rote-learning, discipline, and lecturing to a system that fits the needs of a democracy with a globally integrated free-market that needs problem-solving skills, creativity, communication skills, and flexibility. It should not be neglected that in Croatia some analyses and changes in education system have been made[viii]. The Croatian National Observatory is active in vocational and educational training and adult learning and tries to organise all stakeholders (Government, interested ministries, regional and local bodies and social partners) in providing a modern, quality, and affordable education.

CONCLUSIONS AND RECOMMENDATIONS

Through the diffusion of new technologies and globalisation, industrial economies are being transformed into knowledge-economies accompanied by increased international competition. The important aspects of national economic competitiveness are the skill level and knowledge of the labour force. The Croatian labour force does not have the knowledge and skills required for a modern competitive economy, and the education and training systems have not yet taken adequate steps to remedy this situation. Possible accession to the EU puts further onus on Croatia to concentrate on its education system. The Croatian workforce should move towards knowledge-based industries and jobs and innovation-driven economic growth, and workers should be able to change jobs quickly, manage themselves and others, and engage in continuous learning. Students and employees should learn to work together by developing a team spirit and appropriate social behaviour while at the same time allowing their individual preferences and talents to develop.

Based on different surveys and studies by the World Bank (especially Berryman and Drabek, 2002) and OECD (2003) and comparisons with other European countries' education systems, we would like to propose the following recommendations:

- *The education system should be changed from supply to demand-driven,* i.e. the system should provide learning alternatives that students

(of all ages) can choose from, with increasing responsibility by students as they get older[ix]. Curricula and syllabi at all levels should be reformulated to bring them into closer correspondence with economic needs. Furthermore, the number of required courses should be reduced and the number of electives should be increased. Problem-solving abilities should be improved, teamwork should be encouraged, and learning skills should be enhanced. It is important to increase the ability to learn, develop students' capability to manage themselves and others, build communication and technical/ICT skills, and reduce the emphasis on rote-learning. Curricular reform should be accompanied by new textbooks, teacher guides and learning materials, changes in teaching methods, and new measures of learning outcomes. Also, specialization in vocational education should begin later (shifted to higher grades), while specializations should be broadened.

- *The educational system must be made more flexible*, so as to become a *navigable* system, thus avoiding dead-ends and lowering the early drop-out rate, increasing the internal differentiation of students, reinforcing informal methods of acquiring knowledge and skills, and improving knowledge of foreign languages. The systematic analysis, disburdening and modernization of educational curricula and programs are essential.
- It is important to make *the shift from teacher-focused teaching to teaching methods that give students responsibility for learning, reward initiative and executive thinking,* focus on alternative ways to analyze facts and ideas and solve problems in a meaningful context.
- *Management of the education system should be decentralized*, i.e. budgeting, personnel, and curricula, should be within the purview of the schools and local governments and universities instead of the Ministry. At the same time, schools and local governments must build the capacity to manage their schools effectively. Schools and universities should be responsible and accountable for their results and their performance should be measured by the success in the implementation of reforms. Increasing expenditures for education without an adequate rise in the accountability of those institutions will not provide expected results. Thus, the Government (Ministry) should set standards and hold schools accountable for learning outcomes, e.g. reading comprehension, information and communication technology skills, and give the schools and universities freedom to use their own methods to produce them. This will require nationally written, administered, and graded learning assessments.

- Government has the responsibility to put in place an enabling framework to encourage tertiary education institutions to be more innovative and responsive. *Government should facilitate private provision where possible, restricting its controls to the area of consumer protection.* These include quality assurance through mechanisms such as accreditation and impartial information about public and private institutions relevant to consumer choice.
- It will be necessary to *raise the enrollment quotas for specific majors in the natural and technical sciences, and increase the efficiency of studies* so that the largest possible number of enrolled students complete their studies. Curricula in universities should also be reformed to increase links with the needs of the economy, and dialogue and cooperation between the private sector and universities should be greatly intensified.
- *Higher tuition fees* could contribute to shorter average periods of study, and to greater fairness, because in this manner taxpayers, among whom there are those with lower incomes, would not bear the costs of educating persons whose future earnings will be higher than average.
- In conjunction with radical reforms of curriculum, materials, and pedagogy, Croatia will need vigorously to *train existing and new teachers* including imparting new teaching methods, use of teaching materials, and testing methodology. Teachers should be required to receive life-long training on teaching skills and methods, use of information and communication technology, and subject matter. The training should be interactive, with teachers sharing ideas and experiences.

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i Here we refer to the labor force in the broader sense of a human resource, i.e. the employed and unemployed and inactive persons who can potentially be activated and employed.

ii One should be aware that the concept of human capital is broader than just the formal education of a population and its employees, because it should encompass all knowledge and skills acquired informally and, under the broadest definition, investments in health. The level of human capital need not be the same as the average level of formal education. According to numerous OECD and World Bank sources, in many South American countries there is a high proportion of lawyers and literature and philosophy professors among their educated population, while in the Scandinavian countries there are many persons studying electronics, information technology, management, etc. (Blomström and Meller, 1991). This is not to negate the importance of the first group of the highly-educated, but the second group is nonetheless vital to economic development. Although there are no comprehensive and uniform solutions that suit all needs, the structure of pupils and students should

correspond as much as possible to the existing, and especially future, desired structure of the national economy. Simply put, if a country has a well-developed telecommunications hardware industry-like Finland with Nokia-then it is desirable to have as many electrical engineers and similar occupations among the students and graduates. If the economy is largely oriented toward tourism and providing services, or preserving historical and cultural treasures-such as Greece-then the emphasis could be on educating tourism managers, art historians, restoration experts.

iii *Primary education – levels 1 and 2; secondary education – level 3; tertiary education – levels 5, 6 and 7. The accepted International Standard Classification of Education (ISCED) encompasses the following degrees: X – less than one year of schooling; 0 – kindergarten level; 1 – basic learning in reading, writing and arithmetic, and rudimentary knowledge of national history, geography, natural and social sciences, art, music and religion; 2 – slightly more knowledge of individual subjects and specific forms of commercial and technical subjects; 3 – includes specific forms of education requiring a full eight years of schooling; 5 – various forms of professional education, e.g. for technicians, teachers and nurses; 6 – university degree; 7 – graduate degree. Education not defined by level (Level 9) was for Denmark 0.3; for Ireland 2.0 and for Sweden 0.8%. There are some small differences in age group used for calculating population by education attainment. In some countries and situations, ISCED classifications are not strictly adhered.*

iv *Even in Sweden, the country with the highest percentage of literate people, 8% of the adult population had a severe literacy deficit. In some other countries the percentage even rises to some 25%, so a huge part of the population is incapable of understanding and using the information contained in brochures, information bulletins and simple instructions for working place appliances (UNESCO, 2000).*

v *Note for population: 1 – Age 25-35, de jure population; 2 – Age 25-29; 3 – Age 25-34; excluding population still in school and population whose level of education is unknown; 4 – Age 25-34, excluding expatriate workers and their families; 5 – Age 25-34, excluding population still in school.*

vi *There is a serious problem with international comparisons of drop-out rates because there are no reliable data or they are not adequate for international comparison. Also, although drop-out rate data exist for some countries (for example Bulgaria around 6-7% of the total school population), there is the further problem of hidden drop-outs, the unexcused absences per year (around one–third of Bulgarian students). These children are often not accounted as drop-outs, but in reality they miss nearly one-half of their school time and inevitably their attainment is seriously affected (OECD, 2003).*

vii *The mentioned conclusion is derived from different discussion with experts from Croatian Employment Service as well as the author's analysis of the trends on Croatian labour market.*

viii *Thus, Institute for Social Research – Zagreb and Centre for Educational Research and Development, finished the Draft of Analysis on State Second School-leaving Examination that should enable a whole range of strategic objectives to be introduced into the educational system. These goals are important for its inner transformation and the permanent improvement of education quality. The Institute is also working on the projects Development of Lifelong Education Model for Teachers, Evaluation of Syllabus and Development of Curriculum Model for Compulsory Education, and Feasibility Study for the Compulsory Education Model.*

ix *The long-term nature of education means that it cannot be driven by current demand only but has to meet latent or future demand as well. This effectively means that sup-*

ply side should also have its place in planning education needs. This is an obvious point given the limitations of the market in providing educational services. For this remark, the author is grateful to an anonymous reviewer.

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